PASSIVATION

ASTM-A967

CHARACTERISTICS

- ASTM A967
- QQ-P-35C
- NITRIC & CITRIC
- CLEANS & BRIGHTENS
- AEROSPACE
- MEDICAL
- FOOD HANDLING/PACKAGING

Nitric Acid

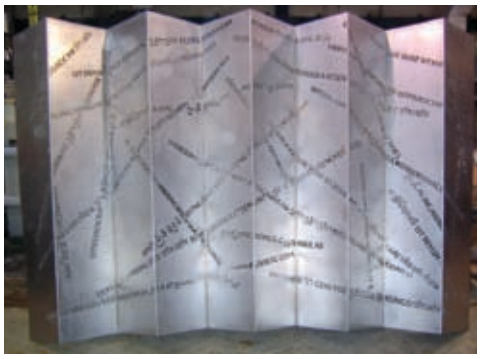
- Removes free iron from the SS substrate…
- Achieves a passive surface…
- Meets QQP-35C (replaced by ASTM A967 [AMS-QQ-P-35])…
- Tested and approved by the aerospace, medical, machining/manufacturing, & food industries…
- Brightens 300 series SS alloys…
- Not as bright of an appearance on 400 series SS…
- Low operating pH…
- <3.0 for all series of SS
- Higher metal removal rate 0.0028 mills/minute per surface (performed on 303 SS)…

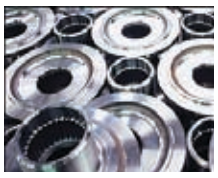
Citric Acid

- Removes free iron from the SS substrate…
- Achieves a passive surface…
- Meets QQ-P-35C (QQP-35C replaced by ASTM A967 [AMS-QQ-P-35])…
- Tested and approved by the aerospace, medical, machining/manufacturing, & food industries…
- Brightens 300 series SS alloys…
- Excellent appearance on 400 series SS…
- Operates at a higher pH…
- 3.0-3.2 for 400 series SS
- 4.5-5.0 for 300 series SS
- Lower metal removal rate
- 0.0010 mills/minut per surface (performed on 303 SS)…
- Accepted as an alternative to nitric acid/sodium dichromate for AMS-QQ-P-35 Type II on 303 SS (less chance for pitting)…

DS-9 System

- Reflective finish on high nickel allows (SS, Inconel, Kovar)…
- Achieves passive Nickel rich surface…
- Promotes an extremely smooth surface…
- Excellent deburring characteristics…
- Autocatalytic chemistry – essentially no shadowing…
- Excellent for…
- Intricately designed parts…
- Small to medium size parts…
- Thin walled parts – no potential of burn through…
- Controlled metal removal…
- DS-9 is listen on many medical, defense, & aerospace specifications…





The new specification for passivation – ASTM A967 – replaces QQ-P-35C (Cancellation notice dated: November 14, 1997). ASTM A967 allows the use of the new citric acid solution as well as the nitric acid solutions covered in QQ-P-35C.

In the last 10 years citric acid solutions have evolved, improving on performance, and reducing costs. In light of the risings costs associated with the nitric system, citric acid becomes a competitively priced alternative.

Please contact Twin City Plating for current test results of citric acid passivation systems. Also available are papers and technical data on both Passivation and Electropolishing of stainless steel alloys."

Surface finishing and value added solutions through innovation and continuous improvement.

Twin City Plating

641 Hoover Street N.E. Minneapolis, MN 55413-2996 • Phone: 612-331-8895 • E-mail: info@twincityplating.com • www.twincityplating.com

ELECTROPOLISH

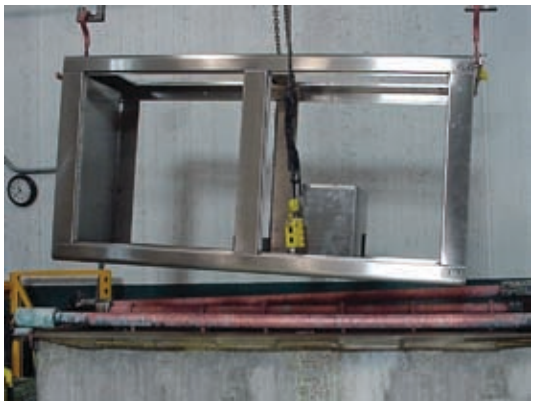
CHARACTERISTICS

- CLEANS & BRIGHTENS
- CHEMICAL DEBURRING
- PASSIVE SURFACE
- CONTROLLABLE
- STAINLESS STEEL & ALUM

Electropolishing

- Stainless Steel and Aluminum capabilities…
- Higher reflectivity on high nickel alloys (SS, Inconel, Kovar)…
- Achieves passive nickel rich surface…
- Promotes an extremely smooth surface…
- Excellent deburring characteristics…
- Limited to anode/cathode relationship – possible shadowing effect…
- More difficult on intricate parts…
- Possible burn through on thin walled parts…
- Excellent on large parts…
- Controlled metal removal…
- Excellent for selective abstraction…

In use since the 1950's, Electropolishing is an electrochemical process that removes surface material and contaminants from the machining/forming processes. Well known for its ability to polish and or brighten finished parts, Electropolish also provides a number of other benefits – deburring capabilities, size control, improvement of microfinish, etc. – all resulting in a passive surface that is highly corrosion resistant.



SERVICES AND CAPABILITIES

- Electroless Nickel
- Composites
  - TwinClad® XT
  - PTFE/Teflon®
  - Diamond
  - Carbide
- Anodize
- Hard Coat Anodize
- Teflon® Impregnation
- Passivation (Nitric and Citric)
- Electropolish
- Hard Gold
- Six plating lines with over 10,000 gallons EN capacity
- Lifting capacity 2-3 tons
- Expedited same-day or next-day service available

About Twin City Plating

Twin City Plating (TCP) has been providing metal finishing services in the upper Midwest since its inception in the 1930's. During the mid 1960's, then Twin City Chromium Plating Company, the company moved to its current location. TCP has specialized in Electroless Nickel for nearly 20 years. Working closely with suppliers, TCP has developed and tested advanced formulations of Electroless Nickel, providing customers with a more robust solution to their everyday metal finishing needs. As the times changes so do customer requirements. Development of composite Electroless Nickel coatings, early adoption of RoHS compliance, and an eye on emerging technologies and new coatings have all been keys to TCP's success. The addition of Anodize and Hard Coat, Electropolishing, Passivation, and Hard Gold Plating has served to expand TCP's capabilities to better serve its customers.

Twin City Plating

641 Hoover Street N.E. Minneapolis, MN 55413-2996 • Phone: 612-331-8895 • E-mail: info@twincityplating.com • www.twincityplating.com

Printed in U.S.A.